



Figure 2. — NOx Converter Efficiency Detector

Subpart E—Exhaust Emission Test Procedures

§ 89.401 Scope; applicability.

(a) This subpart describes the procedures to follow in order to perform exhaust emission tests on new nonroad

compression-ignition engines subject to the provisions of subpart B of this part.

(b) Exhaust gases, either raw or dilute, are sampled while the test engine is operated using the appropriate test cycle on an engine dynamometer. The

Environmental Protection Agency

§ 89.405

exhaust gases receive specific component analysis determining concentration of pollutant, exhaust volume, the fuel flow (raw analysis), and the power output during each mode. Emissions are reported as grams per kilowatt hour (g/kW-hr).

(c) Requirements for emission test equipment and calibrating this equipment are found in subpart D of this part.

[59 FR 31335, June 17, 1994. Redesignated and amended at 63 FR 56995, 57015, Oct. 23, 1998]

§ 89.402 Definitions.

The definitions in subpart A of this part apply to this subpart. For terms not defined in this part, the definitions in 40 CFR part 86, subparts A, D, I, and N, apply to this subpart.

[63 FR 57015, Oct. 23, 1998]

§ 89.403 Symbols/abbreviations.

(a) The abbreviations in § 86.094-3 or § 89.3 of this chapter apply to this subpart.

(b) The abbreviations in Table 1 in appendix A to subpart D also apply to this subpart. Some abbreviations from § 89.3 have been included for the convenience of the reader.

(c) The symbols in Table 2 in appendix A to subpart D apply to this subpart.

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§ 89.404 Test procedure overview.

(a) The test consists of prescribed sequences of engine operating conditions to be conducted on an engine dynamometer. The exhaust gases, generated raw or dilute during engine operation, are sampled for specific component analysis through the analytical train. The test is applicable to engines equipped with catalytic or direct-flame afterburners, induction system modifications, or other systems, or to uncontrolled engines.

(b) The test is designed to determine the brake-specific emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, and particulate matter. For more information on particulate matter sampling see § 89.112(c). The test cycles consist of various steady-state operating modes that include different

combinations of engine speeds and loads. These procedures require the determination of the concentration of each pollutant, exhaust volume, the fuel flow (raw analysis), and the power output during each mode. The measured values are weighted and used to calculate the grams of each pollutant emitted per kilowatt hour (g/kW-hr).

(c)(1) When an engine is tested for exhaust emissions, the complete engine shall be tested with all emission control devices installed and functioning.

(2) On air-cooled engines, the fan shall be installed.

(3) Additional accessories (for example, oil cooler, alternators, or air compressors) may be installed but such accessory loading will be considered parasitic in nature and observed power shall be used in the emission calculation.

(d) All emission control systems installed on or incorporated in the application must be functioning during all procedures in this subpart. In cases of component malfunction or failure, maintenance to correct component failure or malfunction must be authorized in accordance with § 86.094-25 of this chapter.

[59 FR 31335, June 17, 1994. Redesignated and amended at 63 FR 56995, 57015, Oct. 23, 1998]

§ 89.405 Recorded information.

(a) The information described in this section must be recorded, where applicable, for each test.

(b) *Engine description and specification.* A copy of the information specified in this paragraph must accompany each engine sent to the Administrator for compliance testing. The manufacturer need not record the information specified in this paragraph for each test if the information, with the exception of paragraphs (b)(3) and (b)(9) of this section, is included in the manufacturer's application for certification.

(1) Engine-system combination.

(2) Engine identification numbers.

(3) Number of hours of operation accumulated on engine.

(4) Rated maximum horsepower and torque.

(5) Maximum horsepower and torque speeds.

(6) Engine displacement.

(7) Governed speed.